

1

SEQUENCE LISTING

<110> AKZO Nobel N.V.

<120> *Ornithobacterium rhinotracheale* subunit vaccines

<130> 2004.011

<160> 16

<170> PatentIn version 3.2

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<211> 1614

<212> DNA

<213> *Ornithobacterium rhinotracheale*

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ggc gac atc tta gcc gaa atc gaa aca gat aaa gcg gtt caa gaa ttt 144
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gaa aca gat gta gaa ggt act ctt tta tac atc ggt gta gag gct ggt 192
Glu Thr Asp Val Glu Gly Thr Leu Leu Tyr Ile Gly Val Glu Ala Gly
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caa gca gca cca gtt gat agt att tta gct atc atc ggt gca gaa ggc 240
Gln Ala Ala Pro Val Asp Ser Ile Leu Ala Ile Ile Gly Ala Glu Gly
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Glu Asp Ile Ser Gly Leu Val Ser Gly Gly Gly Ala Ser Gln Ser Ala

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gca cca gcg gct gaa gtt cca gaa aat gta act atc gtt tct atg cca			384
Ala Pro Ala Ala Glu Val Pro Glu Asn Val Thr Ile Val Ser Met Pro			
115	120	125	
aga ttg agc gat acc atg gaa gaa ggt aaa gta gaa tct tgg aac aaa			432
Arg Leu Ser Asp Thr Met Glu Glu Gly Lys Val Glu Ser Trp Asn Lys			
130	135	140	
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Lys Val Gly Asp Lys Val Ser Tyr Gly Asp Ile Leu Ala Glu Ile Glu			
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aca gat aaa gcg gtt caa gaa ttt gaa aca gat gta gaa ggt act tta			528
Thr Asp Lys Ala Val Gln Glu Phe Glu Thr Asp Val Glu Gly Thr Leu			
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gga ggt ggt gca aaa cca gct gct aaa gcg gaa gct cca aag gct gaa			672
Gly Gly Gly Ala Lys Pro Ala Ala Lys Ala Glu Ala Pro Lys Ala Glu			
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Pro Ala Ala Pro Lys Ala Gln Ala Thr Asn Asn Ser Gly Arg Val Phe			
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Val Glu Asn Phe Thr Pro Gln Ala Ala Ala Lys Pro Ala Val Ala	
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385 390 395 400	
gta aac atc ggt gtt gca gtt gct gtt cca gat ggg ctt gta gta cct	1248
Val Asn Ile Gly Val Ala Val Ala Val Pro Asp Gly Leu Val Val Pro	
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420 425 430	
gta aaa gat tta gct aca aga tca aga gat aga aaa atc aaa gct gat	1344
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435 440 445	

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 450 455 460

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gta gtt ggt cac aca atg aaa ctt tgt tta gct tgc gat cac aga act 1536
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Thr Asp Lys Ala Val Gln Glu Phe Glu Thr Asp Val Glu Gly Thr Leu			
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Leu Tyr Ile Gly Val Glu Ala Gly Gln Ser Ala Pro Val Asp Ser Ile			
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Leu Ala Ile Ile Gly Pro Glu Gly Thr Asp Val Ser Ala Ile Val Ala			
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Gly Gly Gly Ala Lys Pro Ala Ala Lys Ala Glu Ala Pro Lys Ala Glu			
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Asn Gln Ile Gln Gly Thr Gly Asp Asn Gly Arg Ile Ile Lys Lys Asp
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 305 310 315 320

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 325 330 335

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 340 345 350

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 355 360 365

Asn Asp Ile Val Leu Lys Ala Thr Ala Met Ala Val Lys Lys His Pro
 370 375 380

Val Val Asn Ser Thr Trp Lys Asp Asn Glu Ile Val Gln Tyr Ala Ala
 385 390 395 400

Val Asn Ile Gly Val Ala Val Ala Val Pro Asp Gly Leu Val Val Pro
 405 410 415

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 420 425 430

Val Lys Asp Leu Ala Thr Arg Ser Arg Asp Arg Lys Ile Lys Ala Asp
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Glu Met Glu Gly Ser Thr Phe Thr Val Ser Asn Leu Gly Ala Tyr Gly
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Val Glu Ser Phe Thr Ser Ile Ile Asn Gln Pro Asn Ser Cys Ile Leu
 465 470 475 480

Ser Val Gly Ala Ile Val Glu Lys Pro Val Val Lys Asn Gly Gln Ile
 485 490 495

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			50					55						60					
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			65					70						75					80
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								85						90					95
gat ttg ttt gaa gca agt aaa cac acc gca ttt tac gga aaa tta gaa Asp Leu Phe Glu Ala Ser Lys His Thr Ala Phe Tyr Gly Lys Leu Glu																336			
								100						105					110
tta aaa atc gta gac ggt gca cct acg cca gtg cct tct gtg cct aag Leu Lys Ile Val Asp Gly Ala Pro Thr Pro Val Pro Ser Val Pro Lys																384			
								115						120					125
ttt agt tta gct caa acc ttc gta aaa ggg aat ttt aat aat ttg ggc Phe Ser Leu Ala Gln Thr Phe Val Lys Gly Asn Phe Asn Asn Leu Gly																432			
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gtg cca ggg gct aaa tct tat cat tta tta gct caa ggt tac gga aat Val Pro Gly Ala Lys Ser Tyr His Leu Leu Ala Gln Gly Tyr Gly Asn																480			
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att gct aat ctg aag gag agt aaa gcc aat cca tat ttt gtg cga ttt Ile Ala Asn Leu Lys Glu Ser Lys Ala Asn Pro Tyr Phe Val Arg Phe																528			
								165						170					175
gct agc caa cca aat gcc agc gtg ctg agc gat gct ttg gca caa aaa Ala Ser Gln Pro Asn Ala Ser Val Leu Ser Asp Ala Leu Ala Gln Lys																576			

180	185	190	
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195	200	205	
gcc atg aat ggc gca gca agc aca gat cga aaa ggg aac cct gat gta			672
Ala Met Asn Gly Ala Ala Ser Thr Asp Arg Lys Gly Asn Pro Asp Val			
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Thr Thr Tyr Asn Ser Asn Asp Leu Ser Asp Ala Asn Leu Val Ala Gly			
225	230	235	240
tct att caa aaa tta gta aaa gca ctt aca gat tca ggc gca aaa ggt			768
Ser Ile Gln Lys Leu Val Lys Ala Leu Thr Asp Ser Gly Ala Lys Gly			
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gct gta gcg aat ttg cct tat gtc gaa gac att ccg tat ttt aca acc			816
Ala Val Ala Asn Leu Pro Tyr Val Glu Asp Ile Pro Tyr Phe Thr Thr			
260	265	270	
gtg ccg gct gag cct tta agc cct tta aac aaa agt tac gct aca caa			864
Val Pro Ala Glu Pro Leu Ser Pro Leu Asn Lys Ser Tyr Ala Thr Gln			
275	280	285	
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Ala Leu Gly Ala Ser Asp Arg Lys Ile Thr Phe Asn Ala Asp Lys Ala			
305	310	315	320
agc ggt gct gtg att gta gat aaa agt ttg cca gat tta agt caa aaa			1008
Ser Gly Ala Val Ile Val Asp Lys Ser Leu Pro Asp Leu Ser Gln Lys			
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340	345	350	
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355	360	365	

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 370 375 380

aga ctt gct act ttg aca aaa tta gga tta cca aag gaa aac gcc gct 1200
 Arg Leu Ala Thr Leu Thr Lys Leu Gly Leu Pro Lys Glu Asn Ala Ala
 385 390 395 400

caa ctt tct atg aac gga ctt act tat cca ttg caa gat gcc gat gtt 1248
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 405 410 415

tta acc aaa aat gaa gtt tca aca att cac gaa aga gta aac gaa atc 1296
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 420 425 430

aat caa ggc ata caa gca gtg gca aaa caa ttc aac att gca tat gtg 1344
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gac atg aat gcc gaa atg caa aaa ctc act aaa ggc ttt aaa ttc aac 1392
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 465 470 475 480

gat gga gtg cat tta aac agc cga gga tat gcc cat aca gct aat aca 1488
 Asp Gly Val His Leu Asn Ser Arg Gly Tyr Ala His Thr Ala Asn Thr
 485 490 495

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<213> *Ornithobacterium rhinotracheale*

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50 55 60

Asn Ser Tyr Pro Ala Ile Ile Ala Lys Gln Met Lys Tyr Val Gly Gly
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Gly Glu Phe Ser Gln Pro Leu Met Lys Asp Asn Ile Gly Gly Phe Ser
85 90 95

Asp Leu Phe Glu Ala Ser Lys His Thr Ala Phe Tyr Gly Lys Leu Glu
100 105 110

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115 120 125

Phe Ser Leu Ala Gln Thr Phe Val Lys Gly Asn Phe Asn Asn Leu Gly
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Val Pro Gly Ala Lys Ser Tyr His Leu Leu Ala Gln Gly Tyr Gly Asn
145 150 155 160

Ile Ala Asn Leu Lys Glu Ser Lys Ala Asn Pro Tyr Phe Val Arg Phe

165

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175

Ala Ser Gln Pro Asn Ala Ser Val Leu Ser Asp Ala Leu Ala Gln Lys

180

185

190

Pro Thr Phe Phe Thr Leu Trp Ile Gly Asn Asn Asp Val Leu Gly Tyr

195

200

205

Ala Met Asn Gly Ala Ala Ser Thr Asp Arg Lys Gly Asn Pro Asp Val

210

215

220

Thr Thr Tyr Asn Ser Asn Asp Leu Ser Asp Ala Asn Leu Val Ala Gly

225

230

235

240

Ser Ile Gln Lys Leu Val Lys Ala Leu Thr Asp Ser Gly Ala Lys Gly

245

250

255

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270

Val Pro Ala Glu Pro Leu Ser Pro Leu Asn Lys Ser Tyr Ala Thr Gln

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Ser Gly Ala Val Ile Val Asp Lys Ser Leu Pro Asp Leu Ser Gln Lys

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330

335

Ile Leu Ala Thr Leu Leu Lys Leu Glu Phe Pro Asn Glu Lys Ala Lys

340

345

350

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Leu Leu Pro Leu Thr Ala Ser Arg Thr Leu Gly Lys Leu Asn Ser Glu
 370 375 380

Arg-Leu Ala Thr Leu Thr Lys Leu Gly Leu Pro Lys Glu Asn Ala Ala
 385 390 395 400

Gln Leu Ser Met Asn Gly Leu Thr Tyr Pro Leu Gln Asp Ala Asp Val
 405 410 415

Leu Thr Lys Asn Glu Val Ser Thr Ile His Glu Arg Val Asn Glu Ile
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Asn Gln Gly Ile Gln Ala Val Ala Lys Gln Phe Asn Ile Ala Tyr Val
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Asp Met Asn Ala Glu Met Gln Lys Leu Thr Lys Gly Phe Lys Phe Asn
 450 455 460

Gly Val Asp Tyr Asn Ala Ser Phe Val Thr Gly Gly Ala Phe Ser Leu
 465 470 475 480

Asp Gly Val His Leu Asn Ser Arg Gly Tyr Ala His Thr Ala Asn Thr
 485 490 495

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 act cag cgt tat ata aat gtt cag aac gaa att aca gaa ttt ctt agt 144
 Thr Gln Arg Tyr Ile Asn Val Gln Asn Glu Ile Thr Glu Phe Leu Ser
 35 40 45
 acc cct gat gct gat ttt att tta caa tac ttc cca gat gat aat cag 192
 Thr Pro Asp Ala Asp Phe Ile Leu Gln Tyr Phe Pro Asp Asp Asn Gln
 50 55 60
 tct tat gga gga tat aat tat ttc ttg aaa ttc tca gga aaa gat aag 240
 Ser Tyr Gly Gly Tyr Asn Tyr Phe Leu Lys Phe Ser Gly Lys Asp Lys
 65 70 75 80
 gta agt gcg gaa tca gag acc aat gaa caa gct gta agt tct act ttt 288
 Val Ser Ala Glu Ser Glu Thr Asn Glu Gln Ala Val Ser Ser Thr Phe
 85 90 95
 cga att ctt caa aat gga ggt gca gtt ctt acc ttt gat tta tac aat 336
 Arg Ile Leu Gln Asn Gly Gly Ala Val Leu Thr Phe Asp Leu Tyr Asn
 100 105 110
 gag gag cta cat gaa ttt gca act cct agt cca tca gaa tat cgt gca 384
 Glu Glu Leu His Glu Phe Ala Thr Pro Ser Pro Ser Glu Tyr Arg Ala
 115 120 125
 aaa cga gga gat ttt gaa ttt ttg atc ctt aaa aaa agt aat gac aca 432

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145	150 155 160
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Ala Gly Asn Ile Gln Glu Ile Lys Ser Asn Ile Arg Lys Val Ala Thr	
	165 170 175
aca att gat agg gta gat ctt cca gct caa ggt act ata ggt aca gag	576
Thr Ile Asp Arg Val Asp Leu Pro Ala Gln Gly Thr Ile Gly Thr Glu	
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cct ttg gta ttg tca aca gga gga act aga aat att att ttt agt act	624
Pro Leu Val Leu Ser Thr Gly Gly Thr Arg Asn Ile Ile Phe Ser Thr	
	195 200 205
tta aat ggg ggg agt ata gag tct aca gaa gca tcg tat att ttt aca	672
Leu Asn Gly Gly Ser Ile Glu Ser Thr Glu Ala Ser Tyr Ile Phe Thr	
	210 215 220
gaa aac gga att aag ttt tac aaa cca gtt gaa att aag ggg aaa gtt	720
Glu Asn Gly Ile Lys Phe Tyr Lys Pro Val Glu Ile Lys Gly Lys Val	
225	230 235 240
tac ggt gga tta att ttt gac gaa agt act caa aca tta aag tca gaa	768
Tyr Gly Gly Leu Ile Phe Asp Glu Ser Thr Gln Thr Leu Lys Ser Glu	
	245 250 255
gat ggt gta att gta att aat ttg aaa ttt gtt cct atc aac ttt aaa	816
Asp Gly Val Ile Val Ile Asn Leu Lys Phe Val Pro Ile Asn Phe Lys	
	260 265 270
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Ser Lys Ala Trp Phe Leu Asp Met Ser Lys Ser Glu Asn Thr Ser Glu	
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Gly Tyr Lys Lys Ala Arg Ala Gly Asp Ser Leu Leu His Gly Met Ile	
	290 295 300
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Leu Ser Lys Phe Lys Leu Gln Asp Phe Tyr Val Leu Gly Asn Phe Arg	

305	310	315	320	
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	325	330	335	
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Ala Ile Tyr Gly Leu Ser Phe Lys Gly Glu Asp Ser Asn Pro Asn Leu				
	340	345	350	
atc cac att gag aaa aca aaa cct gtt gaa ttt gat gct tat ttc aaa				1104
Ile His Ile Glu Lys Thr Lys Pro Val Glu Phe Asp Ala Tyr Phe Lys				
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Tyr Val Asn Gly Val Leu Asp Lys Ile Thr Lys Asn Ser Pro Tyr Ile				
	370	375	380	
gta gag gag gtt cag tca gat cct aaa cgt gtg aag cta ata agt aaa				1200
Val Glu Glu Val Gln Ser Asp Pro Lys Arg Val Lys Leu Ile Ser Lys				
	385	390	395	400
aat gat caa gaa tta tgg ttt att ctt gat ttg ctt aaa tga				1242
Asn Asp Gln Glu Leu Trp Phe Ile Leu Asp Leu Leu Lys				
	405	410		

<210> 6
 <211> 413
 <212> PRT
 <213> *Ornithobacterium rhinotracheale*

<400> 6

Met	Lys	Lys	Leu	Ser	Tyr	Leu	Leu	Phe	Ser	Ile	Pro	Leu	Leu	Trp	Gly
1			5					10						15	

Leu	Asn	Ala	Cys	Thr	Glu	Asp	Phe	Glu	Pro	Thr	Phe	Ser	Glu	Asn	Ala
		20					25						30		

Thr	Gln	Arg	Tyr	Ile	Asn	Val	Gln	Asn	Glu	Ile	Thr	Glu	Phe	Leu	Ser
	35					40					45				

Thr Pro Asp Ala Asp Phe Ile Leu Gln Tyr Phe Pro Asp Asp Asn Gln
 50 55 60

Ser Tyr Gly Gly Tyr Asn Tyr Phe Leu Lys Phe Ser Gly Lys Asp Lys
 65 70 75 80

Val Ser Ala Glu Ser Glu Thr Asn Glu Gln Ala Val Ser Ser Thr Phe
 85 90 95

Arg Ile Leu Gln Asn Gly Gly Ala Val Leu Thr Phe Asp Leu Tyr Asn
 100 105 110

Glu Glu Leu His Glu Phe Ala Thr Pro Ser Pro Ser Glu Tyr Arg Ala
 115 120 125

Lys Arg Gly Asp Phe Glu Phe Leu Ile Leu Lys Lys Ser Asn Asp Thr
 130 135 140

Leu Tyr Leu Lys Gly Lys Lys Thr Gly Asn Tyr Met Lys Leu Tyr Lys
 145 150 155 160

Ala Gly Asn Ile Gln Glu Ile Lys Ser Asn Ile Arg Lys Val Ala Thr
 165 170 175

Thr Ile Asp Arg Val Asp Leu Pro Ala Gln Gly Thr Ile Gly Thr Glu
 180 185 190

Pro Leu Val Leu Ser Thr Gly Gly Thr Arg Asn Ile Ile Phe Ser Thr
 195 200 205

Leu Asn Gly Gly Ser Ile Glu Ser Thr Glu Ala Ser Tyr Ile Phe Thr
 210 215 220

Glu Asn Gly Ile Lys Phe Tyr Lys Pro Val Glu Ile Lys Gly Lys Val
 225 230 235 240

Tyr Gly Gly Leu Ile Phe Asp Glu Ser Thr Gln Thr Leu Lys Ser Glu
 245 250 255

Asp Gly Val Ile Val Ile Asn Leu Lys Phe Val Pro Ile Asn Phe Lys
 260 265 270

Ser Lys Ala Trp Phe Leu Asp Met Ser Lys Ser Glu Asn Thr Ser Glu
 275 280 285

Gly Tyr Lys Lys Ala Arg Ala Gly Asp Ser Leu Leu His Gly Met Ile
 290 295 300

Leu Ser Lys Phe Lys Leu Gln Asp Phe Tyr Val Leu Gly Asn Phe Arg
 305 310 315 320

Asp Asn Val Gly Phe Asn Thr Phe Val Glu Gly Tyr Asn Gly Ala Phe
 325 330 335

Ala Ile Tyr Gly Leu Ser Phe Lys Gly Glu Asp Ser Asn Pro Asn Leu
 340 345 350

Ile His Ile Glu Lys Thr Lys Pro Val Glu Phe Asp Ala Tyr Phe Lys
 355 360 365

Tyr Val Asn Gly Val Leu Asp Lys Ile Thr Lys Asn Ser Pro Tyr Ile
 370 375 380

Val Glu Glu Val Gln Ser Asp Pro Lys Arg Val Lys Leu Ile Ser Lys
 385 390 395 400

Asn Asp Gln Glu Leu Trp Phe Ile Leu Asp Leu Leu Lys

405

410

<210> 7

<211> 1023

<212> DNA

<213> *Ornithobacterium rhinotracheale*

<220>

<221> CDS

<222> (1)..(1023)

<400> 7

atg aaa gat ata ttt gaa tat aca ctt cta gca tta ggt ggt ttg cta 48

Met Lys Asp Ile Phe Glu Tyr Thr Leu Leu Ala Leu Gly Gly Leu Leu

1 5 10 15

ctc acc aat tgc tat gat agc gat gag att gaa gta att aaa ttt gat 96

Leu Thr Asn Cys Tyr Asp Ser Asp Glu Ile Glu Val Ile Lys Phe Asp

20 25 30

gat tct ttt act cca gct ccg ccc acc gaa aaa aaa aga gac act ccg 144

Asp Ser Phe Thr Pro Ala Pro Pro Thr Glu Lys Lys Arg Asp Thr Pro

35 40 45

cta ata aat tta tta gat gat ttt gta ttc ttt aaa aaa gat gta gta 192

Leu Ile Asn Leu Leu Asp Asp Phe Val Phe Phe Lys Lys Asp Val Val

50 55 60

aca att ccg gta gat aaa gac aat tta gcc acc aat aat gtc atc agt 240

Thr Ile Pro Val Asp Lys Asp Asn Leu Ala Thr Asn Asn Val Ile Ser

65 70 75 80

ggt gaa gtc ttt aca aat aga aaa atg tct gaa aat ttt gag tat cag 288

Gly Glu Val Phe Thr Asn Arg Lys Met Ser Glu Asn Phe Glu Tyr Gln

85 90 95

ctt gaa tta gac caa gat tgg att agt agc aat ccg gac tta caa gcc 336

Leu Glu Leu Asp Gln Asp Trp Ile Ser Ser Asn Pro Asp Leu Gln Ala

100 105 110

att cca aac gga gct ttt aca atc tct gga caa aca ctc aac aaa gat 384

Ile Pro Asn Gly Ala Phe Thr Ile Ser Gly Gln Thr Leu Asn Lys Asp

115 120 125

gaa aga aat ggt act ttc aaa att cag ctt aat gca gag gtg gcg aaa	432
Glu Arg Asn Gly Thr Phe Lys Ile Gln Leu Asn Ala Glu Val Ala Lys	
130 135 140	
 gag cta gga ggc acc tac tat ctc ccg cta aaa ttg gtt tct aaa aat	480
Glu Leu Gly Gly Thr Tyr Tyr Leu Pro Leu Lys Leu Val Ser Lys Asn	
145 150 155 160	
 gat aat tta aac att tta aag gga tat gaa agt ggc gtt ttt aag cta	528
Asp Asn Leu Asn Ile Leu Lys Gly Tyr Glu Ser Gly Val Phe Lys Leu	
165 170 175	
 gta ttc aaa aaa tcg tat cca atc cca gaa ggt aac aat gtt gaa gga	576
Val Phe Lys Lys Ser Tyr Pro Ile Pro Glu Gly Asn Asn Val Glu Gly	
180 185 190	
 aaa aaa gga tat tat ttt gat ggt tta ggc aat aat ata cct aga aca	624
Lys Lys Gly Tyr Tyr Phe Asp Gly Leu Gly Asn Asn Ile Pro Arg Thr	
195 200 205	
 gat tta tcg ttt aat tca aat tac gcc ccc gat cat ctt ttt aaa tta	672
Asp Leu Ser Phe Asn Ser Asn Tyr Ala Pro Asp His Leu Phe Lys Leu	
210 215 220	
 aat gat gga aac caa caa ggg gct aat tgg tgg gca gac act gat gat	720
Asn Asp Gly Asn Gln Gln Gly Ala Asn Trp Trp Ala Asp Thr Asp Asp	
225 230 235 240	
 aac aca aca tat ctt gat gta aaa ttc cct att aat aca ata aaa gct	768
Asn Thr Thr Tyr Leu Asp Val Lys Phe Pro Ile Asn Thr Ile Lys Ala	
245 250 255	
 ata aaa tta tac act aaa agc tat tgg caa aat gct gta ggc agt gta	816
Ile Lys Leu Tyr Thr Lys Ser Tyr Trp Gln Asn Ala Val Gly Ser Val	
260 265 270	
 aaa att gaa gtt tct aat gat aat ggc aat act tgg aaa gaa cag gga	864
Lys Ile Glu Val Ser Asn Asp Asn Gly Asn Thr Trp Lys Glu Gln Gly	
275 280 285	
 att gct aac ttt ggg caa tat tca aca gtg tct act att gta ttc act	912
Ile Ala Asn Phe Gly Gln Tyr Ser Thr Val Ser Thr Ile Val Phe Thr	
290 295 300	

caa cca att gac att aat gct gtc aga ata tct aac ttc act aga ggg 960
 Gln Pro Ile Asp Ile Asn Ala Val Arg Ile Ser Asn Phe Thr Arg Gly
 305 310 315 320

gga agt agt aat ttc att aac att aac gag gtg gaa gta ttc aaa ata 1008
 Gly Ser Ser Asn Phe Ile Asn Ile Asn Glu Val Glu Val Phe Lys Ile
 325 330 335

cca agt gaa gaa taa 1023
 Pro Ser Glu Glu
 340

<210> 8
 <211> 340
 <212> PRT
 <213> *Ornithobacterium rhinotracheale*

<400> 8

Met Lys Asp Ile Phe Glu Tyr Thr Leu Leu Ala Leu Gly Gly Leu Leu
 1 5 10 15

Leu Thr Asn Cys Tyr Asp Ser Asp Glu Ile Glu Val Ile Lys Phe Asp
 20 25 30

Asp Ser Phe Thr Pro Ala Pro Pro Thr Glu Lys Lys Arg Asp Thr Pro
 35 40 45

Leu Ile Asn Leu Leu Asp Asp Phe Val Phe Phe Lys Lys Asp Val Val
 50 55 60

Thr Ile Pro Val Asp Lys Asp Asn Leu Ala Thr Asn Asn Val Ile Ser
 65 70 75 80

Gly Glu Val Phe Thr Asn Arg Lys Met Ser Glu Asn Phe Glu Tyr Gln
 85 90 95

Leu Glu Leu Asp Gln Asp Trp Ile Ser Ser Asn Pro Asp Leu Gln Ala

100

105

110

Ile Pro Asn Gly Ala Phe Thr Ile Ser Gly Gln Thr Leu Asn Lys Asp

115

120

125

Glu Arg Asn Gly Thr Phe Lys Ile Gln Leu Asn Ala Glu Val Ala Lys

130

135

140

Glu Leu Gly Gly Thr Tyr Tyr Leu Pro Leu Lys Leu Val Ser Lys Asn

145

150

155

160

Asp Asn Leu Asn Ile Leu Lys Gly Tyr Glu Ser Gly Val Phe Lys Leu

165

170

175

Val Phe Lys Lys Ser Tyr Pro Ile Pro Glu Gly Asn Asn Val Glu Gly

180

185

190

Lys Lys Gly Tyr Tyr Phe Asp Gly Leu Gly Asn Asn Ile Pro Arg Thr

195

200

205

Asp Leu Ser Phe Asn Ser Asn Tyr Ala Pro Asp His Leu Phe Lys Leu

210

215

220

Asn Asp Gly Asn Gln Gln Gly Ala Asn Trp Trp Ala Asp Thr Asp Asp

225

230

235

240

Asn Thr Thr Tyr Leu Asp Val Lys Phe Pro Ile Asn Thr Ile Lys Ala

245

250

255

Ile Lys Leu Tyr Thr Lys Ser Tyr Trp Gln Asn Ala Val Gly Ser Val

260

265

270

Lys Ile Glu Val Ser Asn Asp Asn Gly Asn Thr Trp Lys Glu Gln Gly

275

280

285

Ile Ala Asn Phe Gly Gln Tyr Ser Thr Val Ser Thr Ile Val Phe Thr
 290 295 300

Gln Pro Ile Asp Ile Asn Ala Val Arg Ile Ser Asn Phe Thr Arg Gly
 305 310 315 320

Gly Ser Ser Asn Phe Ile Asn Ile Asn Glu Val Glu Val Phe Lys Ile
 325 330 335

Pro Ser Glu Glu
 340

<210> 9
 <211> 1230
 <212> DNA
 <213> *Ornithobacterium rhinotracheale*

<220>
 <221> CDS
 <222> (1)..(1230)

<400> 9
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 Met Ile Lys Lys Val Phe Leu Ser Phe Val Leu Met Ala Ser Thr Gly
 1 5 10 15
 att tta tgg gca ggc gga tac cga gtt tcg ctg caa ggt gta aga caa 96
 Ile Leu Trp Ala Gly Gly Tyr Arg Val Ser Leu Gln Gly Val Arg Gln
 20 25 30
 gcc gcc atg ggg gca caa ggt gta gca ctt tct cac gat gcg agt gtg 144
 Ala Ala Met Gly Ala Gln Gly Val Ala Leu Ser His Asp Ala Ser Val
 35 40 45
 gca ttt ttc aac ccc gca gca ttg gct ttt gta gat gat aaa tta agt 192
 Ala Phe Phe Asn Pro Ala Ala Leu Ala Phe Val Asp Asp Lys Leu Ser
 50 55 60

att gct gtg gga ggt ttc gga att ggg att acc gca aaa tac caa aac	240
Ile Ala Val Gly Gly Phe Gly Ile Gly Ile Thr Ala Lys Tyr Gln Asn	
65 70 75 80	
cgc gaa acg ctc tat aaa gcc gaa acc gac aat ccg ctg ggg aca cca	288
Arg Glu Thr Leu Tyr Lys Ala Glu Thr Asp Asn Pro Leu Gly Thr Pro	
85 90 95	
ctt tat ctt gct aca agc tat aag cct acg gaa aaa cta gcc tta ggc	336
Leu Tyr Leu Ala Thr Ser Tyr Lys Pro Thr Glu Lys Leu Ala Leu Gly	
100 105 110	
gtg agc gta acc act ccg ttt ggg agc acc gta gac tgg gga gat aaa	384
Val Ser Val Thr Thr Pro Phe Gly Ser Thr Val Asp Trp Gly Asp Lys	
115 120 125	
tgg gct gga cgc tac atc att gat aga att gcc ctc aaa tcg ttt ttt	432
Trp Ala Gly Arg Tyr Ile Ile Asp Arg Ile Ala Leu Lys Ser Phe Phe	
130 135 140	
att cag ccc acg gca gcg tat aaa gta acc gat tgg ctc tct gtg ggg	480
Ile Gln Pro Thr Ala Ala Tyr Lys Val Thr Asp Trp Leu Ser Val Gly	
145 150 155 160	
gct ggt gcc atc atc gct cga ggc aat gta aac att aag cgt gca ata	528
Ala Gly Ala Ile Ile Ala Arg Gly Asn Val Asn Ile Lys Arg Ala Ile	
165 170 175	
tct cta ggc aac caa gat gcg ggg cta gaa atc gac aaa aaa gga gct	576
Ser Leu Gly Asn Gln Asp Ala Gly Leu Glu Ile Asp Lys Lys Gly Ala	
180 185 190	
cac gga aca ggg ttt aat gta ggg gtt tat gcc aaa cca aat gat aaa	624
His Gly Thr Gly Phe Asn Val Gly Val Tyr Ala Lys Pro Asn Asp Lys	
195 200 205	
tta aat ata gga att gct tac cga tca gaa gtg aag atg aaa gcg gac	672
Leu Asn Ile Gly Ile Ala Tyr Arg Ser Glu Val Lys Met Lys Ala Asp	
210 215 220	
aaa ggt gat gct gtt ttc aaa aat tta cca agt atc gta aag ggc aaa	720
Lys Gly Asp Ala Val Phe Lys Asn Leu Pro Ser Ile Val Lys Gly Lys	
225 230 235 240	
atg cct ttt tcg gct aaa tat ttt gat gct caa tta cct cta cca gca	768

Met Pro Phe Ser Ala Lys Tyr Phe Asp Ala Gln Leu Pro Leu Pro Ala	
245 250 255	
gaa ctt tta att ggg gcg aac tat aaa gta aca cca aaa ttg ctc gta	816
Glu Leu Leu Ile Gly Ala Asn Tyr Lys Val Thr Pro Lys Leu Leu Val	
260 265 270	
ggg gca gaa att ggg gct gta aaa tgg aac gcc tac gaa aca tta aat	864
Gly Ala Glu Ile Gly Ala Val Lys Trp Asn Ala Tyr Glu Thr Leu Asn	
275 280 285	
att aaa ctt tat aac aac gaa gag gaa tac aac aat act tct aac aaa	912
Ile Lys Leu Tyr Asn Asn Glu Glu Glu Tyr Asn Asn Thr Ser Asn Lys	
290 295 300	
aat tac aaa aac aca tta aat tat agt atc ggg gct gaa tat tta atc	960
Asn Tyr Lys Asn Thr Leu Asn Tyr Ser Ile Gly Ala Glu Tyr Leu Ile	
305 310 315 320	
aat cca aaa gct gcc tta cgc tta ggg tat aaa ttc gac aaa tcg cct	1008
Asn Pro Lys Ala Ala Leu Arg Leu Gly Tyr Lys Phe Asp Lys Ser Pro	
325 330 335	
tcg cca gct gat tcg ttt aac cca gag acc cca acc att aat tat cac	1056
Ser Pro Ala Asp Ser Phe Asn Pro Glu Thr Pro Thr Ile Asn Tyr His	
340 345 350	
gca ttt aca act gga ttt gga tat gaa ttc gag aga ttt cgt gta gat	1104
Ala Phe Thr Thr Gly Phe Gly Tyr Glu Phe Glu Arg Phe Arg Val Asp	
355 360 365	
gcc atg gcg gaa tat tta cta gga aac gaa aga agc ttc cac aat aca	1152
Ala Met Ala Glu Tyr Leu Leu Gly Asn Glu Arg Ser Phe His Asn Thr	
370 375 380	
caa tat aac ttt ggg ggc gac atc aac act ggt ggc tat gtg ttt ggt	1200
Gln Tyr Asn Phe Gly Gly Asp Ile Asn Thr Gly Gly Tyr Val Phe Gly	
385 390 395 400	
cta ggt tta tcg tat aga ctt gac aaa taa	1230
Leu Gly Leu Ser Tyr Arg Leu Asp Lys	
405	

<211> 409

<212> PRT

<213> *Ornithobacterium rhinotracheale*

<400> 10

Met Ile Lys Lys Val Phe Leu Ser Phe Val Leu Met Ala Ser Thr Gly
 1 5 10 15

Ile Leu Trp Ala Gly Gly Tyr Arg Val Ser Leu Gln Gly Val Arg Gln
 20 25 30

Ala Ala Met Gly Ala Gln Gly Val Ala Leu Ser His Asp Ala Ser Val
 35 40 45

Ala Phe Phe Asn Pro Ala Ala Leu Ala Phe Val Asp Asp Lys Leu Ser
 50 55 60

Ile Ala Val Gly Gly Phe Gly Ile Gly Ile Thr Ala Lys Tyr Gln Asn
 65 70 75 80

Arg Glu Thr Leu Tyr Lys Ala Glu Thr Asp Asn Pro Leu Gly Thr Pro
 85 90 95

Leu Tyr Leu Ala Thr Ser Tyr Lys Pro Thr Glu Lys Leu Ala Leu Gly
 100 105 110

Val Ser Val Thr Thr Pro Phe Gly Ser Thr Val Asp Trp Gly Asp Lys
 115 120 125

Trp Ala Gly Arg Tyr Ile Ile Asp Arg Ile Ala Leu Lys Ser Phe Phe
 130 135 140

Ile Gln Pro Thr Ala Ala Tyr Lys Val Thr Asp Trp Leu Ser Val Gly
 145 150 155 160

Ala Gly Ala Ile Ile Ala Arg Gly Asn Val Asn Ile Lys Arg Ala Ile
 165 170 175

Ser Leu Gly Asn Gln Asp Ala Gly Leu Glu Ile Asp Lys Lys Gly Ala
 180 185 190

His Gly Thr Gly Phe Asn Val Gly Val Tyr Ala Lys Pro Asn Asp Lys
 195 200 205

Leu Asn Ile Gly Ile Ala Tyr Arg Ser Glu Val Lys Met Lys Ala Asp
 210 215 220

Lys Gly Asp Ala Val Phe Lys Asn Leu Pro Ser Ile Val Lys Gly Lys
 225 230 235 240

Met Pro Phe Ser Ala Lys Tyr Phe Asp Ala Gln Leu Pro Leu Pro Ala
 245 250 255

Glu Leu Leu Ile Gly Ala Asn Tyr Lys Val Thr Pro Lys Leu Leu Val
 260 265 270

Gly Ala Glu Ile Gly Ala Val Lys Trp Asn Ala Tyr Glu Thr Leu Asn
 275 280 285

Ile Lys Leu Tyr Asn Asn Glu Glu Glu Tyr Asn Asn Thr Ser Asn Lys
 290 295 300

Asn Tyr Lys Asn Thr Leu Asn Tyr Ser Ile Gly Ala Glu Tyr Leu Ile
 305 310 315 320

Asn Pro Lys Ala Ala Leu Arg Leu Gly Tyr Lys Phe Asp Lys Ser Pro
 325 330 335

Ser Pro Ala Asp Ser Phe Asn Pro Glu Thr Pro Thr Ile Asn Tyr His
 340 345 350

Ala Phe Thr Thr Gly Phe Gly Tyr Glu Phe Glu Arg Phe Arg Val Asp
 355 360 365

Ala Met Ala Glu Tyr Leu Leu Gly Asn Glu Arg Ser Phe His Asn Thr
 370 375 380

Gln Tyr Asn Phe Gly Gly Asp Ile Asn Thr Gly Gly Tyr Val Phe Gly
 385 390 395 400

Leu Gly Leu Ser Tyr Arg Leu Asp Lys
 405

<210> 11
 <211> 1140
 <212> DNA
 <213> *Ornithobacterium rhinotracheale*

<220>
 <221> CDS
 <222> (1)..(1140)

<400> 11
 atg aag aaa ata ctt tta gca att agc ttt tcg tct ttt gtt tta agc 48
 Met Lys Lys Ile Leu Leu Ala Ile Ser Phe Ser Ser Phe Val Leu Ser
 1 5 10 15
 tgt agc agt gat gat tac act cca gcc aca cct aaa gaa aca gaa aag 96
 Cys Ser Ser Asp Asp Tyr Thr Pro Ala Thr Pro Lys Glu Thr Glu Lys
 20 25 30
 cct aag gaa gag gct gtg gtt cca aat aag cca gat gaa cca aag gct 144
 Pro Lys Glu Glu Ala Val Val Pro Asn Lys Pro Asp Glu Pro Lys Ala
 35 40 45
 gat gat gga aac gaa aat cca gaa aac act gga gat gaa gag aat gga 192
 Asp Asp Gly Asn Glu Asn Pro Glu Asn Thr Gly Asp Glu Glu Asn Gly

50	55	60	
gat aat aca aac tcc gtt gtc ggg aag cct gat gat ttc cac atg ggg			240
Asp Asn Thr Asn Ser Val Val Gly Lys Pro Asp Asp Phe His Met Gly			
65	70	75	80
aat cgc tct tat gct agc tgg aaa gaa gat gtg gat tat atc gga ggt			288
Asn Arg Ser Tyr Ala Ser Trp Lys Glu Asp Val Asp Tyr Ile Gly Gly			
	85	90	95
ttt gat att gaa act ctt tta agt ggg gct gat aat caa aaa tat gat			336
Phe Asp Ile Glu Thr Leu Leu Ser Gly Ala Asp Asn Gln Lys Tyr Asp			
	100	105	110
gcg gct tat ttt agc caa ttt atc aag ata ttc tca tct agt cca aac			384
Ala Ala Tyr Phe Ser Gln Phe Ile Lys Ile Phe Ser Ser Ser Pro Asn			
	115	120	125
gga aac aat ttc tac act ttt cag gca gaa gac ttt aaa gat gtc gag			432
Gly Asn Asn Phe Tyr Thr Phe Gln Ala Glu Asp Phe Lys Asp Val Glu			
	130	135	140
att aaa gac tta aag ttt gat att ggt aga aat gta att aca ttt aaa			480
Ile Lys Asp Leu Lys Phe Asp Ile Gly Arg Asn Val Ile Thr Phe Lys			
145	150	155	160
act agc tac aaa ggc gta aaa agt gaa att aca tct tct tta aaa ttt			528
Thr Ser Tyr Lys Gly Val Lys Ser Glu Ile Thr Ser Ser Leu Lys Phe			
	165	170	175
gat ttg gct aat ttt tat gat cga aaa atc aaa ata aac gaa gat ttc			576
Asp Leu Ala Asn Phe Tyr Asp Arg Lys Ile Lys Ile Asn Glu Asp Phe			
	180	185	190
gtt gca tct cac tac atg aga ggg att tat gag gag ctt gga ggt ttt			624
Val Ala Ser His Tyr Met Arg Gly Ile Tyr Glu Glu Leu Gly Gly Phe			
	195	200	205
atc ggg aat tta tta aac tac gac gat gag aaa tac aat cta gag tta			672
Ile Gly Asn Leu Leu Asn Tyr Asp Asp Glu Lys Tyr Asn Leu Glu Leu			
	210	215	220
gcg ggg tca aaa aac aaa gat gaa tcc aat aac tct tta ggt ttt agc			720
Ala Gly Ser Lys Asn Lys Asp Glu Ser Asn Asn Ser Leu Gly Phe Ser			
225	230	235	240

att cgc gta aca gat aaa aaa gat aag tat ata aca acg gtt tat aaa	768
Ile Arg Val Thr Asp Lys Lys Asp Lys Tyr Ile Thr Thr Val Tyr Lys	
245 250 255	
aac atc tca gga ttt agg cct ctt tct agt ctg cag gag gag ctt tcc	816
Asn Ile Ser Gly Phe Arg Pro Leu Ser Ser Leu Gln Glu Glu Leu Ser	
260 265 270	
att gct cct act tac gaa ttg cga gag aaa atc aag gag aaa ata gat	864
Ile Ala Pro Thr Tyr Glu Leu Arg Glu Lys Ile Lys Glu Lys Ile Asp	
275 280 285	
aga aat aaa aga aac att agc cta ttg gag cta tta aaa cca tcg gta	912
Arg Asn Lys Arg Asn Ile Ser Leu Leu Glu Leu Leu Lys Pro Ser Val	
290 295 300	
aac gaa tgg atg aag tct gcc gat ttc tac ttt aat aac act gat ttg	960
Asn Glu Trp Met Lys Ser Ala Asp Phe Tyr Phe Asn Asn Thr Asp Leu	
305 310 315 320	
gaa tgg aga gga gat cat tat tca gct aga ggg ttt tta gat ttg tat	1008
Glu Trp Arg Gly Asp His Tyr Ser Ala Arg Gly Phe Leu Asp Leu Tyr	
325 330 335	
ata ggt tcg cct aga ttt gag ctg att tta gca aca aaa gaa gac aat	1056
Ile Gly Ser Pro Arg Phe Glu Leu Ile Leu Ala Thr Lys Glu Asp Asn	
340 345 350	
tgg ttg att ttg aaa gtg aaa gtg gtt cag ata aat gaa gtg cct acc	1104
Trp Leu Ile Leu Lys Val Lys Val Val Gln Ile Asn Glu Val Pro Thr	
355 360 365	
gat ttg gtg tat agc tta aga gtt tca att aac taa	1140
Asp Leu Val Tyr Ser Leu Arg Val Ser Ile Asn	
370 375	

<210> 12

<211> 379

<212> PRT

<213> *Ornithobacterium rhinotracheale*

<400> 12

Met Lys Lys Ile Leu Leu Ala Ile Ser Phe Ser Ser Phe Val Leu Ser
 1 5 10 15

Cys Ser Ser Asp Asp Tyr Thr Pro Ala Thr Pro Lys Glu Thr Glu Lys
 20 25 30

Pro Lys Glu Glu Ala Val Val Pro Asn Lys Pro Asp Glu Pro Lys Ala
 35 40 45

Asp Asp Gly Asn Glu Asn Pro Glu Asn Thr Gly Asp Glu Glu Asn Gly
 50 55 60

Asp Asn Thr Asn Ser Val Val Gly Lys Pro Asp Asp Phe His Met Gly
 65 70 75 80

Asn Arg Ser Tyr Ala Ser Trp Lys Glu Asp Val Asp Tyr Ile Gly Gly
 85 90 95

Phe Asp Ile Glu Thr Leu Leu Ser Gly Ala Asp Asn Gln Lys Tyr Asp
 100 105 110

Ala Ala Tyr Phe Ser Gln Phe Ile Lys Ile Phe Ser Ser Ser Pro Asn
 115 120 125

Gly Asn Asn Phe Tyr Thr Phe Gln Ala Glu Asp Phe Lys Asp Val Glu
 130 135 140

Ile Lys Asp Leu Lys Phe Asp Ile Gly Arg Asn Val Ile Thr Phe Lys
 145 150 155 160

Thr Ser Tyr Lys Gly Val Lys Ser Glu Ile Thr Ser Ser Leu Lys Phe
 165 170 175

Asp Leu Ala Asn Phe Tyr Asp Arg Lys Ile Lys Ile Asn Glu Asp Phe

180

185

190

Val Ala Ser His Tyr Met Arg Gly Ile Tyr Glu Glu Leu Gly Gly Phe
 195 200 205

Ile Gly Asn Leu Leu Asn Tyr Asp Asp Glu Lys Tyr Asn Leu Glu Leu
 210 215 220

Ala Gly Ser Lys Asn Lys Asp Glu Ser Asn Asn Ser Leu Gly Phe Ser
 225 230 235 240

Ile Arg Val Thr Asp Lys Lys Asp Lys Tyr Ile Thr Thr Val Tyr Lys
 245 250 255

Asn Ile Ser Gly Phe Arg Pro Leu Ser Ser Leu Gln Glu Glu Leu Ser
 260 265 270

Ile Ala Pro Thr Tyr Glu Leu Arg Glu Lys Ile Lys Glu Lys Ile Asp
 275 280 285

Arg Asn Lys Arg Asn Ile Ser Leu Leu Glu Leu Leu Lys Pro Ser Val
 290 295 300

Asn Glu Trp Met Lys Ser Ala Asp Phe Tyr Phe Asn Asn Thr Asp Leu
 305 310 315 320

Glu Trp Arg Gly Asp His Tyr Ser Ala Arg Gly Phe Leu Asp Leu Tyr
 325 330 335

Ile Gly Ser Pro Arg Phe Glu Leu Ile Leu Ala Thr Lys Glu Asp Asn
 340 345 350

Trp Leu Ile Leu Lys Val Lys Val Val Gln Ile Asn Glu Val Pro Thr
 355 360 365

Asp Leu Val Tyr Ser Leu Arg Val Ser Ile Asn
 370 375

<210> 13
 <211> 918
 <212> DNA
 <213> *Ornithobacterium rhinotracheale*

<220>
 <221> CDS
 <222> (1)..(918)

<400> 13
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 Met Ile Val Lys Asp Phe Ser Asp Tyr Thr Phe Arg Cys Ser Gln Leu
 1 5 10 15
 ggt aag tta atg gtt ggt gtc aag cca cca tta acc cct aat caa gag 96
 Gly Lys Leu Met Val Gly Val Lys Pro Pro Leu Thr Pro Asn Gln Glu
 20 25 30
 aag ttg ctc aca gac tta gag ggc aaa atg gaa gct ggg acc att acc 144
 Lys Leu Leu Thr Asp Leu Glu Gly Lys Met Glu Ala Gly Thr Ile Thr
 35 40 45
 aaa aag caa atc atc act tat ggt gaa ttg ctt tcc aag aaa aac caa 192
 Lys Lys Gln Ile Ile Thr Tyr Gly Glu Leu Leu Ser Lys Lys Asn Gln
 50 55 60
 aag ctt gaa tta tct gca agt gta aag tct tac tta gcc gac att cat 240
 Lys Leu Glu Leu Ser Ala Ser Val Lys Ser Tyr Leu Ala Asp Ile His
 65 70 75 80
 aaa gaa gtc ttt ttt ggt cgt gat aag gaa ttg acc aat aaa tat cta 288
 Lys Glu Val Phe Phe Gly Arg Asp Lys Glu Leu Thr Asn Lys Tyr Leu
 85 90 95
 tca aaa ggc att caa gta gaa gaa aag agc ata acg ctc tat tcc gat 336
 Ser Lys Gly Ile Gln Val Glu Glu Lys Ser Ile Thr Leu Tyr Ser Asp
 100 105 110

gtc tgt aac aag tta ttc cta aag aat aaa aag ttt tac aaa aac gat	384
Val Cys Asn Lys Leu Phe Leu Lys Asn Lys Lys Phe Tyr Lys Asn Asp	
115 120 125	
ttt att caa ggt acg cca gat aac acg caa gac aaa atc aga gat atc	432
Phe Ile Gln Gly Thr Pro Asp Asn Thr Gln Asp Lys Ile Arg Asp Ile	
130 135 140	
aaa agt agt tgg gac ttc tca acc ttt cct cta cac gcc gat gaa acg	480
Lys Ser Ser Trp Asp Phe Ser Thr Phe Pro Leu His Ala Asp Glu Thr	
145 150 155 160	
cca acc aaa gac tat gaa tgg cag ttg caa ggt tat atg gaa tta aca	528
Pro Thr Lys Asp Tyr Glu Trp Gln Leu Gln Gly Tyr Met Glu Leu Thr	
165 170 175	
ggc tta aaa gaa gct gag ttg att tat tgc ttg gtt gat acg cct cat	576
Gly Leu Lys Glu Ala Glu Leu Ile Tyr Cys Leu Val Asp Thr Pro His	
180 185 190	
aaa att gta gaa gat gaa atc cga aga atg gac tgg aag cat aat tta	624
Lys Ile Val Glu Asp Glu Ile Arg Arg Met Asp Trp Lys His Asn Leu	
195 200 205	
ctt gac att aac ggc gaa gtg aga gcc gag aca aga gat tta gta gtt	672
Leu Asp Ile Asn Gly Glu Val Arg Ala Glu Thr Arg Asp Leu Val Val	
210 215 220	
gag att gtg tct aac tta att tat acc aag caa ggc ttg gaa gac ttt	720
Glu Ile Val Ser Asn Leu Ile Tyr Thr Lys Gln Gly Leu Glu Asp Phe	
225 230 235 240	
tgt cag cag tcc gca gtc ata aac aaa gat tgg ttc acg gac ttt gag	768
Cys Gln Gln Ser Ala Val Ile Asn Lys Asp Trp Phe Thr Asp Phe Glu	
245 250 255	
gaa ata cca caa gaa ttg aga att aaa gtt ttt cac ttt gag cat caa	816
Glu Ile Pro Gln Glu Leu Arg Ile Lys Val Phe His Phe Glu His Gln	
260 265 270	
aaa gag atg att agc gca ctc tac gag caa ata gga aga tgt aga gcg	864
Lys Glu Met Ile Ser Ala Leu Tyr Glu Gln Ile Gly Arg Cys Arg Ala	
275 280 285	
cat tta aac gac ttg acc atg aaa atg gca aca cga tta gaa tta ata	912

His Leu Asn Asp Leu Thr Met Lys Met Ala Thr Arg Leu Glu Leu Ile
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gca taa

918

Ala

305

<210> 14

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<212> PRT

<213> *Ornithobacterium rhinotracheale*

<400> 14

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 20 25 30

Lys Leu Leu Thr Asp Leu Glu Gly Lys Met Glu Ala Gly Thr Ile Thr
 35 40 45

Lys Lys Gln Ile Ile Thr Tyr Gly Glu Leu Leu Ser Lys Lys Asn Gln
 50 55 60

Lys Leu Glu Leu Ser Ala Ser Val Lys Ser Tyr Leu Ala Asp Ile His
 65 70 75 80

Lys Glu Val Phe Phe Gly Arg Asp Lys Glu Leu Thr Asn Lys Tyr Leu
 85 90 95

Ser Lys Gly Ile Gln Val Glu Glu Lys Ser Ile Thr Leu Tyr Ser Asp
 100 105 110

Val Cys Asn Lys Leu Phe Leu Lys Asn Lys Lys Phe Tyr Lys Asn Asp
 115 120 125

Phe Ile Gln Gly Thr Pro Asp Asn Thr Gln Asp Lys Ile Arg Asp Ile
 130 135 140

Lys Ser Ser Trp Asp Phe Ser Thr Phe Pro Leu His Ala Asp Glu Thr
 145 150 155 160

Pro Thr Lys Asp Tyr Glu Trp Gln Leu Gln Gly Tyr Met Glu Leu Thr
 165 170 175

Gly Leu Lys Glu Ala Glu Leu Ile Tyr Cys Leu Val Asp Thr Pro His
 180 185 190

Lys Ile Val Glu Asp Glu Ile Arg Arg Met Asp Trp Lys His Asn Leu
 195 200 205

Leu Asp Ile Asn Gly Glu Val Arg Ala Glu Thr Arg Asp Leu Val Val
 210 215 220

Glu Ile Val Ser Asn Leu Ile Tyr Thr Lys Gln Gly Leu Glu Asp Phe
 225 230 235 240

Cys Gln Gln Ser Ala Val Ile Asn Lys Asp Trp Phe Thr Asp Phe Glu
 245 250 255

Glu Ile Pro Gln Glu Leu Arg Ile Lys Val Phe His Phe Glu His Gln
 260 265 270

Lys Glu Met Ile Ser Ala Leu Tyr Glu Gln Ile Gly Arg Cys Arg Ala
 275 280 285

His Leu Asn Asp Leu Thr Met Lys Met Ala Thr Arg Leu Glu Leu Ile
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Ala

305

<210> 15

<211> 888

<212> DNA

<213> *Ornithobacterium rhinotracheale*

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Met Asn Glu Leu Ala Lys Asn Asp Ile Lys Ser Leu Leu Lys Ser Ala	
1 5 10 15	

gac atc aac aaa aga ttt gag caa ttg ctc ggc aaa aaa gca caa ggc	96
Asp Ile Asn Lys Arg Phe Glu Gln Leu Leu Gly Lys Lys Ala Gln Gly	
20 25 30	

ttt atc tca tca gtc ttg cag acg gca caa aat aac aga ttg tta gcg	144
Phe Ile Ser Ser Val Leu Gln Thr Ala Gln Asn Asn Arg Leu Leu Ala	
35 40 45	

aca gcc gac cca aag acc att cta aac gct gca gta aca gcc gcg act	192
Thr Ala Asp Pro Lys Thr Ile Leu Asn Ala Ala Val Thr Ala Ala Thr	
50 55 60	

tta gat ttg cca att aat cag aat tta ggt tac gcc tac atc gtg cct	240
Leu Asp Leu Pro Ile Asn Gln Asn Leu Gly Tyr Ala Tyr Ile Val Pro	
65 70 75 80	

tac aaa ggg cag gcg caa ttc caa tta ggc tgg aag ggc ttt gta gca	288
Tyr Lys Gly Gln Ala Gln Phe Gln Leu Gly Trp Lys Gly Phe Val Ala	
85 90 95	

tta gct aaa aga agt ggc gca tat ttg aaa atg aat gta gta act gtc	336
Leu Ala Lys Arg Ser Gly Ala Tyr Leu Lys Met Asn Val Val Thr Val	
100 105 110	

tat caa aat caa ttc aaa tcc tac aat cgc tta aca gaa gaa tta gat	384
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295

<210> 16

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<213> *Ornithobacterium rhinotracheale*

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Met Asn Glu Leu Ala Lys Asn Asp Ile Lys Ser Leu Leu Lys Ser Ala
 1 5 10 15

Asp Ile Asn Lys Arg Phe Glu Gln Leu Leu Gly Lys Lys Ala Gln Gly
 20 25 30

Phe Ile Ser Ser Val Leu Gln Thr Ala Gln Asn Asn Arg Leu Leu Ala
 35 40 45

Thr Ala Asp Pro Lys Thr Ile Leu Asn Ala Ala Val Thr Ala Ala Thr
 50 55 60

Leu Asp Leu Pro Ile Asn Gln Asn Leu Gly Tyr Ala Tyr Ile Val Pro
 65 70 75 80

Tyr Lys Gly Gln Ala Gln Phe Gln Leu Gly Trp Lys Gly Phe Val Ala
 85 90 95

Leu Ala Lys Arg Ser Gly Ala Tyr Leu Lys Met Asn Val Val Thr Val
 100 105 110

Tyr Gln Asn Gln Phe Lys Ser Tyr Asn Arg Leu Thr Glu Glu Leu Asp
 115 120 125

Ala Asp Phe Thr Ile Glu Gly Asn Gly Glu Val Val Gly Tyr Ala Ala
 130 135 140

Tyr Phe Lys Glu Ile Asn Gly Phe Glu Lys Leu Ser Phe Trp Ser Ile
145 150 155 160

Glu Gln Val Lys Lys His Ala Thr Lys Tyr Ser Gln Thr Tyr Gly Lys
165 170 175

Lys Ser Arg Ser Gly Ala Leu Met Phe Ser Pro Trp Asn Asp Glu Asp
180 185 190

Gln Phe Asp Ala Met Ala Met Lys Thr Val Leu Lys Asn Thr Leu Ser
195 200 205

Lys Phe Gly Thr Leu Ser Ile Glu Met Gln Met Ala Gln Met Ala Asp
210 215 220

Gln Ala Val Ile Lys Asn Glu Gly Glu Tyr Glu Tyr Ile Asp Asn Thr
225 230 235 240

Ile Asp Ile Glu Ala Glu Ser Ala Glu Glu Glu Ala Asn Arg Ile Met
245 250 255

Lys Phe Ile Asp Lys Ala Glu Ser Ile Glu Ala Leu Glu Glu Leu Lys
260 265 270

Ser Ser Val Asp Glu Asn Gly Asp Leu Glu Leu Leu Ala Tyr Tyr Asp
275 280 285

Asn Arg Lys Asn Glu Leu Lys
290 295